

The present invention relates to a method and system for selecting coding mode for video encoding. A detailed description of an exemplary embodiment is set forth in the January 3, 2005 Amendment at page 5. Iverson and Jeong are also described in the same Amendment at page 5. Applicant refers the Examiner to these descriptions.

The Examiner has essentially repeated those rejections previously of record and provided several rebuttal arguments in response to comments for patentability. Applicant responds as follows.

Rejection of Claims 1-7 under § 103(a) over Iverson

Rejection of Claims 1-3 under § 103(a) over Jeong

Applicant submits that Iverson and Jeong both deal with determining whether to code a block in intraframe encoding or interframe encoding *on a block-by-block basis*. On the other hand, claim 1 recites an SAD examiner for generating coding selection information *for coding the frame data* in an intra-coding mode when the SAD value of the input frame data output from the motion prediction part exceeds a predetermined SAD threshold, or in an inter-coding mode when the SAD value of the input frame data does not exceed the predetermined SAD threshold. A block-by-block determination of coding will result in a frame having multiple encoding schemes. In contrast, claim 1 recites coding *the frame data in an intra-coding mode or in an inter-coding mode*.

In addition to the above, Applicant submits that the Examiner has failed to establish a *prima facie* case of obviousness. Claim 1 recites, *inter alia*, a first memory for storing frame data of an input image; a second memory for storing the previous frame data. The Examiner

concedes that Iverson and Jeong fail to show the first and second memories as described in claim

1. Detailed Action, paragraphs 2 and 3. However, the Examiner contends that the current and reference frame data are applied as separate inputs to the motion estimator in figure 3 of Iverson, and that having the current and reference frame data being applied as separate inputs suggests that the current and reference frame data are stored in different storage mediums. Applicant disagrees.

The motion estimator, as part of the encoding system, has one single input to obtain the current and reference frame data. Figure 1, a block diagram of an encoding system, illustrates that the memory interface 110 is the only input/output means between the memory device 112 storing the current and reference frame data and the host processor 116 of the encoding system. Iverson also discloses, in its description of the preferred embodiments, that the host processor 116 reads the bitmaps from the memory device 112 via high-speed memory interface 110 and generates encoded video signals. Col. 2, lines 60-63. The encoded video signals are then stored to the memory device 112 via the memory interface 110. Col. 2, line 67 to col. 3, line 2. Therefore, Iverson discloses that the encoding system has only one input, *i.e.*, the memory interface 110, to obtain the current and reference frame data.

Figure 3 is a block diagram of the processing performed by the encoding system of figure 1, and the motion estimator in figure 3 is part of the encoding system. Therefore, the motion estimator could only obtain the current and reference frame data from the input of the memory interface 110. The Examiner's contention that the current and reference frame data are applied

as separate inputs is contrary to the disclosure of Iverson that the current and reference frame data are inputted into the encoding system through the memory interface 110 as the single input.

Therefore, not only does Iverson fail to show the first and second memories as described in claim 1, as correctly conceded by the Examiner, Iverson also fails to suggest the first and second memories as described in claim 1.

The Examiner's proffered reason for modifying either Iverson or Jeong is to make the apparatus more efficient by allowing the system to perform more complex operations with the increase of memory. Applicant submits that the Examiner's proffered reason for modifying either of the references is too broad to lead to the modification to the memory. Nowhere in Iverson or Jeong is there any suggestion that modifying the memory into two memories would make the system more efficient or more capable. Furthermore, even assuming *arguendo* that it is obvious to one having ordinary skill in the art to modify the memory, there may be a mere increase in the size of the memory but there is still nothing to suggest that there would be a first memory for storing frame data of an input image and a second memory for storing the previous frame data.

Therefore, for at least the above reasons, claim 1 is believed to be patentable.

With regard to claims 2-3 and with further regard to claim 1, in the January 3 Amendment, it was argued that Iverson and Jeong only disclosed coding a macro block, while claims 1-3 recited coding the frame data. The Examiner rebuts the argument by stating that since macro blocks make up a frame, macro blocks are considered to be frame data. Applicant

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disagrees. Frame data is data that represents the frame, while macro block data is data that represents that macro block. Therefore, macro blocks cannot be considered as frame data.

Therefore, for at least these reasons, claims 1-3 are believed to be patentable.

Claims 4-7 are patentable at least for their dependency.

Claim 5 is also patentable because Iverson fails to disclose or suggest a device wherein each of the plurality of SAD values of the present input frame data are compared with the predetermined SAD threshold *to code the input frame data* in one of the intra-coding mode and the inter-coding mode. Moreover, the Examiner's contention that "the plurality of SAD values are contained within the inter-SAD value," in Iverson, is incorrect because the inter-SAD is a sum of absolute differences, not a plurality of sum of absolute differences. Col. 5, lines 45-59.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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Respectfully submitted,



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